DOCUMENT RESUME

ED 228 424 CE 035 525

AUTHOR Conti, Gary J.
TITLE Principles of Adult Learning Scale: Followup and Factor Analysis.
PUB DATE [83]
NOTE 12p.; For a related document see ED 179 713.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Basic Education; Adult Education; *Adult Educators; *Attitude Measures; *Factor Analysis; Statistical Analysis; *Teacher Attitudes; *Teaching Methods; Test Reliability; Test Validity
IDENTIFIERS *Collaborative Teaching Learning Mode; *Principles of Adult Learning Scale

ABSTRACT

In 1978 the Principles of Adult Learning Scale (PALS) was developed to measure the degree of practitioner support of the principles of the collaborative teaching-learning mode for teaching adults. Although the original study with a field test group of 57 produced a valid and reliable 44-item summated rating scale, the stability of the normative statistics for the instrument and the generalizability of the instrument to the multiple audiences within the adult education enterprise remained unestablished. The analysis of 778 cases in which PALS has been used indicated that the descriptive statistics for PALS are stable, that is, that 146 is an accurate mean while the standard deviation should be 20. An analysis of variance showed no significant differences among various groups tested and lent support for the generalizability of PALS. The factors produced by a factor analysis using the Statistical Package for the Social Sciences (SPSS) Factor Analysis program supported the construct validity of PALS. The stable normative statistics for PALS suggested that it is a valid instrument for use in research studies. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED228424

PRINCIPLES OF ADULT LEARNING SCALE: FOLLOW-UP AND FACTOR ANALYSIS

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

G Conti

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Gary J. Conti
Texas A&M University

The Problem

A large portion of the adult education literature endorses the collaborative teaching-learning mode as an appropriate method for assisting adults in the learning process. In 1978, the Principles of Adult Learning Scale (PALS) was developed to measure the degree of practitioner support of these principles. Although the original study with a field test group of 57 produced a valid and reliable instrument, the stability of the normative statistics for the instrument and the generalizability of the instrument to the multiple audiences within the adult education enterprise remained unestablished. These depended upon the use of PALS in a variety of settings and on the follow-up analysis of this larger pool of data. Such an analysis could also provide additional checks on the construct validity of the instrument.

Review of Related Literature

Although there are various modes of instruction, a significantly large portion of the adult education literature generally supports the collaborative mode as effective and appropriate for teaching adults. The writings of Lindeman, Bergevin, Kidd, Houle, Knowles, and Freire exhibit much commonality in the basic assumptions of adult learning. Collectively they argue that the curriculum should be learner centered, that learning episodes should capitalize on the learner's experience, that adults are self-directed, that the learner should participate in needs diagnosis, goals formation, and outcomes evaluation, that adults are problem-centered, and that

CE035525

the teacher should serve as a facilitator rather than a repository of facts.

In the collaborative mode, adult education is learner centered and a cooperative venture in which the learner is a full partner (Bergevin, 1967, p. 168). In this process, the learner is put first, and education seeks to solve the peculiar problems of the participants. This approach emphasized that people, not subjects, are taught and that subjects are merely the vehicles and examples for learning (Bergevin, 1967, p. 92). Since, "the approach to adult education will be via the route of *situations,* not subject" (Lindeman, 1926/1961, p. 6), in the collaborative mode the curriculum is built around the student's needs and interests with the central purpose of assisting the learner in "being" and "becoming" (Kidd, 1976, p. 125).

In this mode, the role of experience is emphasized. Adult education assists adults in becoming aware of their significant experiences and in relating these to other events in their lives (Lindeman, 1926/1961, p. 109). For adults, their experiences serve as a ever growing reservoir that can serve as a learning resource (Knowles, 1973, p. 39) and are a key in stimulating their engagement in learning (Kidd, 1976, p. 271).

One assumption of the collaborative mode is that adults are moving in the direction of increased self-direction (Knowles, 1970, p. 39) and that they have the inherent ability to control their own lives (Freire, 1970). This development is fostered by adults taking responsibility for their own learning (Kidd, 1976).

In the collaborative mode, adults become involved in their education by appraising needs, goals, and outcomes. This involvement leads to learner responsibility and autonomy, increases the relevancy of the learning activities, and assures that the learner's goals are fully achieved (Houle,

1972; Kidd, 1976; Knowles, 1970).

The collaborative mode assumptions recognize that adults are problem-centered. Adults have greater interest in learning when they are dealing with problems which directly concern them (Bergevin, 1967, p. 148) and which have immediate application (Knowles, 1970, p. 39). Importantly, they have within themselves the capacity to solve their own problems (Freire, 1970).

In the collaborative mode, the role of the teacher is to function as a facilitator. The teacher's task is to create a supportive environment in which the learner is free to take risks (Kidd, 1976; Knowles, 1970) and "to draw out, not pour in" (Lindeman, 1926/1961, p. 119; Freire, 1970). When the teacher functions in this manner, education becomes a cooperative art (Houle, 1972, p. 34).

Thus, a significant portion of the adult education literature supports the assumptions of the collaborative teaching-learning mode. Although various authors stress different elements composing this mode, they all profess a learner-centered approach in adult education in which the key word is always participation (Lindeman, 1926/1961, p. xvi).

Principles of Adult Learning Scale

The Principles of Adult Learning Scale (PALS) was developed to measure practitioner support of the collaborative mode as described in the adult education literature. The items were formulated from concepts specifically stated in the adult education literature. The construct validity for the items of the instrument was established through the testimony of juries of adult educators. The content validity was established by field tests with adult basic education practitioners in full-time public school programs in Illinois. The first phase of the field-testing consisted of activities to

improve the discriminating power of potential items. The second phase involved the testing of a similar form of the instrument with 57 practitioners in a variety of adult basic education settings. Criterion-related validity was established by the actual classroom observation of those who had scored two standard deviations either above or below the mean. These observations were rated according to the Flanders Interaction Analysis Categories (FIAC), and these scores were compared to PALS. The FIAC was selected because it measures initiating and responsive classroom actions and because the actions described in Flanders' definition of initiating are highly congruent with the characteristics of the collaborative mode. Reliability was established by retesting a group of 23 adult basic education practitioners after a seven day interval. In addition to these traditional checks of validity and reliability, social desirability and congruency of item interpretation by practitioners were also investigated.

As a result of this procedure, a reliable and valid 44 item summated rating scale, which is rooted in the adult education literature, was produced. The instrument can be completed in less than 15 minutes and scored quickly. This study suggested a mean of 146 and standard deviation of 22 for the instrument. Conti (1978, 1979) has described in detail the development of the instrument, made suggestions for its use in empirical studies and with practitioners, recorded the final form of the instrument, and reported on procedures for scoring.

Follow-Up Uses of PALS

Since its development, PALS has been used in numerous adult educator training workshops and in three doctoral studies. Individual scores from these uses have provided a diverse data set for re-examining the normative statistics for the instrument and for formulating insights related to its future use.

The analysis of 778 cases indicates that the descriptive statistics for PALS are stable. These cases were drawn from a variety of institutional settings in different areas of the United States. In a staff development needs study, Dinges (1980) tested 265 adult basic education teachers throughout Illinois with the instrument. Investigating the relationship between managerial style and support of the principles in the adult education literature, Pearson (1980) administered PALS to 99 midwestern training directors. Douglass (1982) used PALS as the measurement device in a study examining the relationship of professional training in adult education to the degree of support of the collaborative mode by 204 hospital educators and cooperative extension educators in Washington. In addition, 153 scores were collected from Texas adult education practitioners in the areas of adult basic and allied health education. Although these groups represent a much broader sampling of the adult education community than the pilot group, the descriptive statistics for each as shown in Table 1 are similar to those produced in the original study. The similarity between the mean and standard deviation scores for the total of all groups and the original pilot group indicates that 146 is an accurate mean for PALS. This additional data suggests that the standard deviation should be 20.

Table 1

Mean and Standard Deviation of

Various Adult Education Groups on PALS

Group	Size	Mean	Standard Deviation
Original Sample	57	145.60	22.14
Hospital Educators	97	149.25	17.90
Training Directors	99	148.76	22.30
Cooperative Extension	107	146.30	18.46
Texas Adult Educators	153	144.02	21.26
Illinois ABE Teachers	265	145.14	19.96
Total	778	146.09	20.28

This expanded data set lends additional support for the generalizability of PALS. Although PALS was originally designed for use with adult basic education practitioners, an analysis of variance as shown in Table 2 indicates that no significant difference exists among the various groups tested (p = .28). Therefore, even though the wording of some items may not be specifically appealing to some areas of the field, PALS can be used by adult educators in a wide variety of settings to measure support of the collaborative mode.

Table 2

Analysis of Variance Between

Various Groups Sampled with PALS

Source	d f	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	5	2,586	517	1.26	.28
Within Groups	772	316,838	410		
Total	777	319,424			

Factor Analysis of PALS

The large number of cases which were collected made it possible to conduct a factor analysis on PALS and thereby to statistically check the construct validity of the instrument. "Factor Analysis is based on the fundamental assumption that some underlying factors, which are smaller in number than the number of observed variables, are responsible for the covariation among the observed variables" (Kim & Mueller, 1978, p. 12). If PALS correctly measures the collaborative theory in the literature, then this data reduction technique should produce identifiable factors which are similar to the major concepts discussed in the literature.

When conducting a factor analysis, it is desirable to have a 10 to 1 ratio of cases to variables. This was exceeded by using 509 cases for this 44 item instrument. Although researchers often delete items below a .4 loading from a factor, Kim and Mueller (1978) warn that "the deletion of variables in order to have a neat factorial structure can lead into an erroneous conclusion" (p. 68). In addition, since "a good factor analysis

requires the researcher to know a great deal about the factorial structure of variables" (p. 68), each item was assigned to the factor in which it had the highest loading. In this way, every item in the instrument was retained for factor analysis.

The SPSS Factor Analysis program utilizing principal factoring with iteration and varimax rotation was used. This procedure produced seven discernable factors. In these factors, 31 items loaded above .40; three were between .35 and .40; seven were between .30 and .35; and only three were below .30.

Factor 1 contained 12 negative items. These items focused on evaluation by formal tests, on comparing the learners to outside standards such as standarized tests and middle-class values, and on control of the learner by means of quiet deskwork, disciplinary action, and teacher determination of objectives. These items are antithetical to the collaborative concept of Learner Centered Activities.

The nine items in Factor 2 related to Personalizing Instruction. They dealt with the self-pacing of learning, utilizing a variety of materials, methods and assignments, and objectives which are based on individual motives and abilities.

Factor 3 was made up of six items and was titled Relating to Experience. Items in this factor focused on problem solving, utilizing prior experience, and relating learning activities to everyday life.

The four items in Factor 4 stressed the importance of Assessing Student Needs. Items related to individual conferences, informal counseling, and learner involvement in diagnosis composed this factor.

Climate Building was Factor 5. These four items stressed self-control through classroom breaks and interaction with other students. Also included

were the teacher's elimination of barriers by utilizing the existing competencies of the students and by accepting errors as a natural part of learning.

Factor 6 dealt with Participation in the Learning Process. The four items in this factor dealt with the learner demonstrating self-direction in selecting the learning content, evaluating performance, and identifying problems.

Finally, Factor 7 contained the remainder of the negative items. These five items were the opposite of Flexibility for Personal Development. They contained the negative traits of avoiding value issues, of maintaining classroom discipline, of intransigence in modifying original objectives, and of viewing the teacher as primarily a provider of knowledge.

The factors produced by this analysis support the construct validity of PALS. These seven factors, which were statistically derived, are similar to the general principles found in a review of the adult education literature supporting the collaborative mode. This statistical analysis using a broad sampling of adult education practitioners supports the testimony of the original jury for PALS and further confirms the construct validity of the instrument.

Empirical Uses of PALS

The stable normative statistics for PALS suggests that it is a valid instrument for use in research studies. In these studies, PALS can be used to measure the degree of practitioner support of the collaborative mode which is widely supported in the literature. This measurement can be combined with a wide variety of other controls to produce research-based data to evaluate the validity of the literature base and to provide situational specificity to the general principles discussed in the literature. Varia-

bles that may be studied are student growth in the cognitive and affective domain, the relationship of teaching and learning style, and factors influencing the situational setting such as the nature of the curriculum or the institutional setting.

By combining a variety of studies in areas such as these, it will be possible to provide greater specificity to the literature. For example, Pearson (1980) found that congruency exists between management style and teaching style and, more importantly, that the amount of formal education was the major influence in accepting a collaborative approach in these areas. Douglass (1982) took this concept one step further when he found that the amount of formal training specifically in adult education was the major influence on accepting a collaborative approach in an adult education setting. Just as these two studies have explored a similar area, PALS can serve as the measurement device for other studies dealing with a variety of the variables in the adult learning transaction.

References

Bergevin, P. *A philosophy for adult education.* New York: The Seabury Press, 1967.

Conti, G. J. *Principles of Adult Learning Scale: An instrument for measuring teacher behavior related to the collaborative teaching-learning mode.* Unpublished doctoral dissertation, Northern Illinois University, 1978.

Conti, G. J. *Principles of Adult Learning Scale.* Ann Arbor, Mich.: Adult Education Research Conference, 1979. (ERIC Document Reproduction Service No. ED 179 713).

Dinges, R. F. *The degree of utilization of the collaborative teaching-learning mode by adult basic education teachers in Illinois.* Unpublished doctorial dissertation, Southern Illinois University, 1980.

Douglass, J. F. *An analysis of the relationship between professional training in adult education and orientation to the teaching-learning mode in Washington state hospital and the Washington state cooperative extension service.* Unpublished doctoral dissertation, Indiana University, 1982.

Freire, P. *Pedagogy of the oppressed.* New York: The Seabury Press, 1970.

Houle, C. O. *The design of education.* San Francisco: Jossey-Bass, Inc., 1972.

Kidd, J. R. *How adults learn.* New York: Association Press, 1976.

Kim, J. Factor analysis. In N. Nie, C. Hull, J. Jenkins, K. Steinbrenner, & D. Bent (Eds.), *Statistical package for the social sciences* (2nd ed.). New York: McGraw-Hill Book Company, 1975.

Kim, J., & Mueller, C. W. *Introduction to factor analysis.* Beverly Hills, Calif.: Sage Publications, 1978.

Knowles, M. S. *The modern practice of adult education.* New York: Association Press, 1970.

Lindeman, E. C. *The meaning of adult education.* Montreal: Harvest House, 1961. (Originally published, 1926).

Pearson, T. G. *Managerial philosophy and adult learning principles: Training and development professionals as manager of collaborative learning.* Unpublished doctoral dissertation, Northern Illinois University, 1980.